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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,633

06/02/2006

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EXAMINER

VERDERAME, ANNA L

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,633	<b>Applicant(s)</b> SHIMA ET AL.	
	<b>Examiner</b> ANNA L. VERDERAME	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3,6,8,10,12,17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,6,8,10,12,17 and 18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The response filed on 08/27/2009 has been carefully considered. A response is presented below.

#### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 and 17-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not disclose that the absorption coefficient of the decomposition layer is equal to or larger than 0.39 and equal to or lower than 1.0 with respect to a laser beam having a wavelength of 390 nm to 420 nm.

At (0090-0091) the specification recites that the light absorption coefficient  $k$  is equal to or lower than 2.0 and preferably equal to or lower than 1.0 with respect to light having a wavelength of 635 to 660 nm.

A wavelength of 390-420nm is disclosed at 0145, 0150, 0155, and 0158 but the light absorption coefficient of the decomposition reaction layer at these wavelengths is never disclosed.

The ellipsometer DHA-OLX/S4M used to take the measurements shown in applicant's table 1 has a wavelength of 632 nm. See included Arai et al. reference.

The specification also does not disclose the low point of 0.39 for a wavelength of 635 to 675 nm since this light absorption coefficient value taken from table 1 is measured at 632 nm. The specification does support a light absorption coefficient of 1.0 or less for wavelengths in the range of 635 to 675 nm.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3,6,8,10,12, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over J. Kim, I. Wang, D. Yoon, I. Park, and D. Shin. Applied Physics Letters. 83 , 1701 (2003) as applied above in view of T. Shima and J. Tominaga. Japanese Journal of Applied Physics. 42(2003) 3479.

Kim et al. teaches an optical recording medium comprising a substrate of polycarbonate, a ZnS-SiO<sub>2</sub> layer, an Ag<sub>6</sub>In<sub>4.5</sub> Sb<sub>60.8</sub> Te<sub>28.7</sub> layer, a ZnS-SiO<sub>2</sub> layer, a PtO<sub>x</sub> layer, a ZnS-SiO<sub>2</sub>, an Ag<sub>6</sub>In<sub>4.5</sub> Sb<sub>60.8</sub> Te<sub>28.7</sub> layer and a ZnS-SiO<sub>2</sub> layer (figure 1). The ZnS-SiO<sub>2</sub> layer is (ZnS)<sub>85</sub>(SiO<sub>2</sub>)<sub>15</sub> like the applicant's. Each layer is formed by sputtering. The PtO<sub>x</sub> layer is formed using a Pt<sub>100</sub> target (page 1, column 1). The PtO<sub>x</sub> layer is PtO<sub>1.1</sub> (second page, column 1). The medium is recorded using a laser beam. Upon exposure the PtO<sub>x</sub> layer decomposes resulting in a release of oxygen gas and the

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generation of Pt nanoparticles (page 2, first column). Release of gas and the subsequent volume change causes a deformation of the two upper and lower  $\text{Ag}_6\text{In}_{4.5}\text{Sb}_{60.8}\text{Te}_{28.7}$  (page 2, column 2). Kim et al. discloses a  $\text{PtO}_x$  layer wherein  $x$  is 1.1. Based on the disclosure in applicant's table 1, a  $\text{PtO}_{1.1}$  layer will inherently have an absorption coefficient of between 1.69-1.98 at the wavelength used by the applicant. Kim et al. discloses an optical recording medium containing a  $\text{PtO}_{1.1}$  reaction layer, a light absorbing layer and a dielectric layer. The  $\text{PtO}_x$  layer is formed by reactive sputtering.

Shima et al. discloses a reactive sputtering method for forming  $\text{PtO}_x$  films. A Pt target having a purity of 99.9% is used. The target has a diameter of 76mm (7.6 cm). This gives an area for the target of  $38\text{cm}^2$ . Powers of 100-200 W are disclosed. If a power in the range from 100-150W is used the power density will be less than  $4\text{W}/\text{cm}^2$ . a pressure of 0.5 Pa is used. Oxygen flow ratio is recited to be varied between 0 to 0.75. This includes a flow ratio of 10% (0.1) and larger (first column on page 3479). Use of  $\text{PtO}_x$  films in optical discs is disclosed in the first column on page 3479 (emphasis added). Refractive indices and extinction coefficients for the  $\text{PtO}_{1.1}$  film and a  $\text{PtO}_{1.6}$  film formed according to this method are disclosed in the second column on page 3479 and continue to the first column of page 3480. The extinction coefficient for the  $\text{PtO}_{1.1}$  film at 400 nm is 1.8 and is 1.9 at 630 nm. The extinction coefficient for the  $\text{PtO}_{1.6}$  film is 1.6 at 400 nm and 1.3 at 630 nm. These are discussed as used in S-RENS layers of optical recording media and have a higher transmission when heated (figure 3).

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It would have been obvious to one of ordinary skill in the art to use a  $\text{PtO}_{1.6}$  film formed according to the method taught by Shima et al. in the medium taught by Kim et al. based on the use of a  $\text{PtO}_x$  films by Kim et al. and based on the disclosure by Shima et al. to use  $\text{PtO}_x$  films including  $\text{PtO}_{1.6}$  films in optical recording media.

*Shima discloses that  $k$  is 1.3 for a  $\text{PtO}_{1.6}$  film where the laser beam has a wavelength of 630 nm, but the applicant's specification A  $\text{PtO}_{1.6}$  film should have an extinction coefficient  $k$  with respect to a wavelength of 635 nm between .39( $\text{PtO}_{1.7}$ ) and 1.32( $\text{PtO}_{1.3}$ ). [0184-0187]. The position of the examiner is that the absorption coefficient condition is met inherently for at least one wavelength in the recited ranges by the  $\text{PtO}_{1.6}$  film of Shima. It would be expected that  $k$  of a  $\text{PtO}_{1.6}$  film would be closer to that for a  $\text{PtO}_{1.7}$  film than that for a  $\text{PtO}_{1.3}$  film.*

*Regarding applicant's argument of whether one of ordinary skill in the art would modify Kim by using a  $\text{PtO}_{1.6}$  film, the examiner notes that Shima et al. discloses use of  $\text{PtO}_x$  films including  $\text{PtO}_{1.6}$  films in optical discs for S-RENS layers and the improvement in the transmittance of the heated form. Therefore one of ordinary skill in the art would be motivated to use such films and would expect to realize the benefits recited by applicant.*

***Response to Arguments***

Response to arguments can be found below the rejections to which they pertain.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

T. Arai et al., Thin Solid Films 515(2007) 4774.- discloses that the ellipsometer DHA-OLX/S4M used by applicant to take measurements presented in table 1 has a wavelength of 632.8 nm(see paragraph right below figure 1).

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANNA L. VERDERAME whose telephone number is (571)272-6420. The examiner can normally be reached on M-F 8A-4:30P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571)272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin J Angebranndt/  
Primary Examiner, Art Unit 1795

9/28/09